CHAPTER VI: COMPLEMENTARY AND ALTERNATIVE MEDICINE AND AGING

Theoretical Aspects of the Aging Process

What I would like to do in the next hour, leaving sufficient time for questions and answers, is to divide this talk into essentially 4 components: the first component will be a review of what I, and my colleagues, consider to be a number of essential theoretical aspects of the aging process; then I'd like to talk about a few principles of complementary and alternative medicine and how we at the National Center for Complementary and Alternative Medicine consider them to be related to the aging process; then I'd like to talk about some selected issues in women's health as they are getting older; lastly, to be fair, some selected elements of men's health as they get older. Obviously, this is a huge topic, so forgive me if I don't cover every single thing that might be on your minds, and we will leave time for questions and answers.

So to begin, there is, in my and other people's minds, a sociodemographic mandate that we all share to pay attention to the aging process. By the year 2025, essentially 20+ years from now, there will be more than 800 million people around the globe beyond the age of 65; 2/3 of those people will be in what we refer to as developing countries. Now population aging, as I think we all recognize, has enormous health consequences for all countries, including our own. Health care goals, the large health care goals, not just the microfocused of scientists, are to prevent and postpone disease and disability as long as we can and to maintain the health and physical and functional independence and mobility of our population as we all get older.

Now this slide derives from recent census data from this very country. What you can see is that the most rapidly growing age demographic cohort of people in this country, and all other western countries in which comparable census data have been collected, is what we refer to in geriatrics as the old old. That is to say people 85 years of age and beyond, who, in the next 3 to 5 decades, will increase anywhere from twofold to fivefold.

Certainly over the next 5 decades, really good projections are that. Actually, the most rapidly growing age demographic cohort, you'll be interested to learn, is really not just the old old but the elite old old—namely, centenarians who are growing at the most rapid rate. There are actually many national and international studies to try to figure out what are they doing right, or what their parents did right, or their great-grandparents. In any event, followed quickly thereafter, in an age demographic sense, are what we refer to in geriatrics as the young old. That is to say those between age 65 and 84.9, if you will, who really comprise essentially today's baby boomer population born the vanguard in 1946. So this represents an enormous age wave.

Now there is, as we all know, a gender disparity in longevity in every country in which it's been looked at. Women make up the majority of the older populations in all countries. On average, they live to approximately 80 years of age. Certainly, a young baby girl born today would be expected, in most western countries, to live, all other factors being the same, to about 80 years of age. They live about 7 to 8 years longer than do men on the average. Now I might tell you, and I didn't bring this slide, that recent census data in this country, and, again, in other western countries, show quite clearly that the gender disparity in longevity is actually diminishing. It's not stable, and it's not increasing. That's because not only are women living healthier longer, but so too are men, and men disproportionately so because finally they've got the message that women have had all along and that is to pay attention to preventive care in treating high blood pressure, buckling up on the seat belts, drinking less than they used to, and so forth – being a little more health sensitive than men have typically been. This has paid a good price.

In general, women have more health problems as they age than do men of comparable ages. There's an increase in chronic diseases after the menopause, and we're going to talk about those as we proceed. In this country, after the age of 55, 1 in 5 women live in some state of decreased functional independence, or if we prefer, to refer to it as disability. So what is aging at root? Well, at root, we consider it both in humans and in nonhumans to be the age-related deterioration of physiological functions necessary for 1)

fertility and 2) survival, which is in the scheme of things more important than fertility. In other species, of course, once you've had your progeny, you're it. You're history. For example, if you happen to be a drosophila fruit fly and you haven't been injected with some new gene, you do your thing, and you're gone.

Now, in addition, there is a progressive loss of reserve capacity of various organ systems throughout the body. That leads to a decreased ability to compensate for various stresses, or what we refer to in scientific circle as stressors. More about those as we go on. Or injuries. Ultimately, of course, as we all recognize, there is an ebb and flow that we all succumb to, and this leads inevitably to death of the organism. But on the way, it leads to increased susceptibility to age-related disease and ultimately to death from disease, not from old age, which is an important element to keep in your thinking. So I happen to be by trade both a hormone specialist, what's referred to as an endocrinologist, and also a geriatrician, that is, a specialist in getting older. I did that when I started looking into the mirror and got discouraged. So in this context, from my changing eyesight's perspective, that is, a geriatrician's perspective, you can see 3 generations of women here. You get the sense that the oldest of these 3, presumably the grandmother, is not as sprightly as she might have been at one point or not as sprightly as, presumably, her daughter and granddaughter. So that relates to functionality, which is a hallmark in the thinking of geriatric medicine. Functionality includes all sorts of things, namely the ability to manage our everyday routines in multiple ways, both physically and psychologically, and interpersonally, and in every other way you can imagine. Living independently, both physically and psychologically, is in fact the hallmark of aging gracefully, something to which I think we all aspire as the years go on. Conversely, geriatricians, in particular those who care for elderly patients, are particularly concerned with the loss of independent functionality, whether that be physical or psychological, which is a serious condition that ultimately leads to a condition that we refer to as frailty, or more specifically, musculoskeletal frailty. So in our schematic that's rather simplistic, but not terribly far from the real truth. Loss of independence, physically and/or psychologically, leads, we believe, to a condition of increased frailty, and that leads, as you can see on the

vertical axis, to increasing needs and dependency, which is a hallmark of adverse consequences of aging—something that we'd like to forestall, at least as long as possible.

So all of us are used to thinking about the nature/nurture controversy. In fact, last week's *Time* magazine had a cover story on nature/nurture. It's no longer just nature versus nurture, it's nature versus nurture versus nature plus nurture, which is the new twist. So from a nature perspective, genetics implies that aging, the aging process, as in part of the developmental sequence from the time we're in our mothers' uteri all the way through the end of our life spans, is programmed into our genes. Certain genes are timekeepers for the aging process. We know that because we've discovered certain clot genes in the brain that control certain brain functions or brain hormone functions, and clot genes in other parts of the body that do similar kinds of things. In contrast, there is the nurture element or what we refer to as wear and tear—a myriad of factors in the environment cause aggregate or cumulative damage to the cells of our body and different organ systems, like the kidney, the liver, the heart, or the brain. Mechanisms to resist and repair these damages are very critical and themselves erode with advancing years. So we are less plastic or less resilient in our ability to respond to a lot of outside stressors: disease; infection; psychological stress; losses—these are part of the ebb and flow of what we call life. We don't necessarily respond as well as we should for a variety of reasons, including the decreased ability of all our regenerative processes at every level of the body, whether it be molecular or whole body or holistic.